

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

24 JUN 2005

PCT

## NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Rule 71.1)

To:

VAN MALDEREN, Joëlle  
Office Van Malderen  
Place Reine Fabiola 6/1  
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**REÇU**  
14. -3- 2005  
OFFICE VAN MALDEREN

Date of mailing  
(day/month/year) 10.03.2005

Applicant's or agent's file reference P.SIDM.36/WO	<b>IMPORTANT NOTIFICATION</b>	
International application No. PCT/BE 03/00188	International filing date (day/month/year) 06.11.2003	Priority date (day/month/year) 20.12.2002
Applicant SIDMAR N.V. et al.		

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer  Novoa, C Tel. +49 89 2399-2718
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**ATENT COOPERATION TREATY**  
**PCT**  
**INTERNATIONAL PRELIMINARY EXAMINATION REPORT**  
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P.SIDM.36/WO	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/BE 03/00188	International filing date (day/month/year) 06.11.2003	Priority date (day/month/year) 20.12.2002
International Patent Classification (IPC) or both national classification and IPC C22C38/00		
Applicant SIDMAR N.V. et al.		

<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 10 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 1 sheets.</p>
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li>I <input checked="" type="checkbox"/> Basis of the opinion</li> <li>II <input type="checkbox"/> Priority</li> <li>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li>IV <input type="checkbox"/> Lack of unity of invention</li> <li>V <input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li>VI <input type="checkbox"/> Certain documents cited</li> <li>VII <input type="checkbox"/> Certain defects in the international application</li> <li>VIII <input type="checkbox"/> Certain observations on the international application</li> </ul>

Date of submission of the demand 29.06.2004	Date of completion of this report 10.03.2005
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer  Gavriliu, A Telephone No. +49 89 2399-7190



INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT

International application No. PCT/BE 03/00188

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-31 as originally filed

**Claims, Numbers**

6-19 as originally filed  
1-5 received on 21.02.2005 with letter of 18.02.2005

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- the language of publication of the international application (under Rule 48.3(b)).
- the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- the description, pages:
- the claims, Nos.:
- the drawings, sheets:

5.  This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

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**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	9-19
	No: Claims	1-8
Inventive step (IS)	Yes: Claims	
	No: Claims	1-19
Industrial applicability (IA)	Yes: Claims	1-19
	No: Claims	

2. Citations and explanations

**see separate sheet**

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Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Amendments**

In the new filed independent claim 1 the term "substantially" has been removed.

The amendment filed by the Applicant in the letter of 18.02.2005 fulfills the requirements of Art. 34(2)(b) PCT.

**2. Reference is made to the following documents:**

D1 = JP-A-11 315 328 and Computer generated English Translation

D2 = EP-A-1 154 028, cited by the Applicant

**3. Clarity and conciseness**

It is underlined that product claims 14-18 have been drafted as separate independent claims although they relate effectively to the same subject-matter and they differ from each other only with regard to the definition of the subject-matter for which protection is sought and in respect of the terminology used for the features of that subject-matter.

The aforementioned claims therefore lack conciseness and lack of clarity as a whole arises. Thus, the present claims 14-18 do not meet the requirements of Article 6 PCT.

**4. NOVELTY**

**4.1 Independent claim 1**

D1 discloses a steel for peripheral components of motor vehicles having the following composition (by wt %): C: 0.05-0.2 %; Mn: 0.5-2.5 %; Al: 0.01-2.5 %; Si: 0.3-2.5 %, P: 0-0.15 %, and optionally one or more of Ti: 0-0.05 %; Nb: 0-0.05 % and B: 0-0.005 %, with the balance Fe and unavoidable impurities.

The composition ranges of the steel disclosed by D1 are seen as anticipating the ranges of the steel of claim 1 since the claimed ranges clearly overlap the disclosed ones. Therefore, the steel claimed by claim 1 embraces a sub-range of composition

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which is considered as a selection from the steel known from D1.

However, such a selection can only be regarded as novel if:

- a) the selected sub-range is narrow in relation to the range given in the prior art;
- b) the selected sub-range is sufficiently far removed from the preferred part of the known range (as illustrated for instance in the examples given in the prior art)
- c) the selected sub-range is not an arbitrarily chosen specimen from the prior art, i.e. not merely one way of carrying out the prior teaching, but must provide a new invention (purposive selection).

All three criteria a) to c) must be fulfilled.

Criterion a) appears to be fulfilled since the claimed ranges of C, Mn, Al, Si and P are narrow compared to D1.

Criterion b) is not considered as being fulfilled for the following reasons:

Example E in Table 1 of D1 discloses a steel having the following composition (in wt %): C= 0.13 %; Mn= 1.62 %; Al= 1.02 %; Si= 0.43 %; P= 0.12 %, N= 0.0029 % and balance Fe and impurities. The composition values of this steel (converted into ppm) fall within the ranges of the steel of claim 1 excepting P which is slightly higher.

Regarding the P content of 0.12 wt % disclosed by the steel of D1 it is underlined that such point-like disclosures for alloy composition in the state of the art must be interpreted as average or nominal values within a small range in view of known fluctuations in reproducibility and in analytical results.

In addition, this value of P content being only slightly outside of the claimed range of 0.04-0.10 wt % is a clear indication that the person skilled in the art would in the light of said steel seriously contemplate of working in the range of the overlap.

Furthermore, the steel of D1 is applied for the production of automotive parts and therefore it should feature high levels of weldability and tensile strength the same as the claimed steel. It is strongly doubted that such a very small difference of only 0.02 wt % in the P content between the steel of D1 and the claimed steel would result in any significant difference in weldability characteristics.

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In other words, with a difference of only 0.02 wt % in the phosphorus content the steel of D1 featuring the same levels of C, Mn, Al and Si as the claimed steel should feature a reduced risk of segregation defects and deterioration of weldability in the same way as the claimed steel does. Said negligible difference cannot be seen as having a negative impact on weldability since, as already explained, the steel of D1 has the same destination, i.e. the automotive industry, requiring a good weldability as the claimed steel.

Therefore, the steel according to example E in Table 1 of D1 is considered as being indeed very close to the claimed steel composition.

As a result, criterion b) is not considered to be fulfilled.

The steel of D1 is applicable to the production of high strength sheets for peripheral components of motor vehicles (paragraphs 0001 and 0032) and has a structure of ferrite and bainite containing retained austenite and modified martensite similarly to the steel of the present application.

Therefore, criterion c) is not considered to be fulfilled.

Since criteria b) and c) are not satisfied the composition of steel according to claim 1 is considered to be known from D1.

Consequently, the subject-matter of claim 1 is not novel over the disclosure of D1 (Art. 33(1) and (2) PCT).

**4.2. Dependent claims 2, 7 and 8**

The steel according to the Example E in Table 1 of D1 contains C= 0.13 wt %, and Al= 1.02 %, values which fall within the more restricted C and Al ranges claimed by claims 2 and 8 respectively of the present application.

Furthermore, the composition of said steel of D1 falls within the ranges claimed by present claim 7 excepting the P content which, as already explained above, is only slightly higher. For the same reasons as explained on par. 4.1, the composition of steel claimed by claim 7 is considered to be known from D1.

Thus, the subject-matter of claims 2, 7 and 8 is not novel (Art. 33(1) and (2) PCT).

#### 4.3 Dependent claims 3-6

The more restricted ranges claimed by these claims are also seen as selections from the steel known from D1.

It is underlined that the carbon content range of 0.05-0.2 wt % of the steel of D1 is punctually overlapped by the range of 0.2-0.26 wt % of claim 6.

Although criteria a) and b) of novelty of selection invention appear to be fulfilled, as already explained on paragraph 4.1 the steel of D1 is applicable to the production of high strength sheets for peripheral components of motor vehicles similarly to the steel of the present application.

Therefore, criterion c) is not considered to be fulfilled and thus, the composition of steel according to claims 3-6 is considered to be known from the disclosure of D1 (Art. 33(1) and (2) PCT).

### 5. INVENTIVE STEP

#### 5.1 Independent claim 9 - process claim

The closest prior art is considered to result from D1 which discloses a method for production of high strength steel sheets for peripheral components of motor vehicles comprising:

- slab heating within 950-1200°C,
- hot rolling within 650°C - Ar3,
- cooling and coiling at 650°C-800°C,
- further cooling at a speed of above 20°C/sec and recoiling at 300-500°C.

Claim 9 of the present application departs from the disclosure of D1 by the following process steps:

- the finishing hot rolling temperature is above Ar3,
- cooling to 500°C-680°C and coiling within this temperature range,
- pickling,
- cold rolling with a minimum reduction rate of 40%.

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The technical problem to be solved by the present claim 9 was therefore to provide a suitable process in order to improve the mechanical properties of the steel products as to increase the safety of automotive parts.

However, these process steps are common practice for production of multiphase high-strength steels for automotive parts and cannot be seen as involving any inventive activity.

For instance, document D2 discloses such a method of production of automotive components suitable for absorbing energy at high speed made of multiphase steel. The steel of D2 consists of ferrite, martensite, residual austenite and bainite and has a higher tensile strength within 600-1100 MPa as well as work hardening index of 0.165-0.30 between 10% elongation and uniform elongation (claims 4, 5, 9), the same as the claimed steel. Said steel of D2 has a composition similar to the steel claimed by the present application but having a lower Al content, i.e. it contains (in wt %) C: 0.06-0.17 %; Mn: 1.35-1.80 %; Al: **0.05-0.50** %; Si: 0.35-0.50 %; P: 0.02-0.12 %; Nb: max.0.07 %; V: max.0.20 %; Ti: max.0.05 %; B: max. 30 ppm; N: 100-350 ppm and remainder Fe and impurities (paragraph 0011).

It is to be noted that example F in Table 1 on page 5 clearly hints to working at a P level within the range as claimed).

Said steel is subjected to the following process steps (paragraph 0043; examples on Table 1):

- heating the steel blocks to 1250°C for 30 minutes,
- hot rolling with a finishing temperature of 940-970°C,
- simulated coiling temperature of 690 ± 10°C,
- pickling,
- cold-rolling with a thickness reduction of 75 %.

The hot rolling finishing temperature range of the steel of D2 is above Ar3.

The coiling temperature of 680°C that is disclosed by D2 falls within the claimed coiling temperature range of 500°C-680°C. The cold-rolling thickness reduction also falls within the claimed range of more than 40 %.

Thus, the process of D2 comprises the same steps as claimed by claim 9 of the

present application.

The person skilled in the art wishing to provide a suitable process for producing of automotive parts from the multiphase steel of D1 would consider applying the common practice in this technical field, such as disclosed by document D2. The application of the above mentioned process steps seen as common practice to the steel of D1 would be obvious for the person skilled in the art and would lead to the subject-matter of claim 9 in an obvious manner.

Consequently, the subject-matter of claim 9 is not inventive in view of the obvious combination of D1 with the common knowledge in this technical field, such as disclosed by D2 (Art. 33(3) PCT).

#### 5.2 Dependent claims 10-13

Dependent claims 10-13 do not contain any additional features which, in combination with the features of claim 9 to which they refer, meet the requirements of the PCT with respect to inventive step, the reasons being that their additional features are known from the disclosure of D1 combined with the common knowledge in the art, such as disclosed by D2 (Art. 33(3) PCT).

- **claim 10:** D2 further disclosed the steps of annealing by heating for 30 sec. at 800°C, slow cooling to 660°C followed by cooling to 400°C at a cooling rate of 100°C/s, holding at 400°C for 60 sec., cooling to room temperature at a cooling rate of 50°C/s. (example 3, paragraphs 0067-0070; claims 13-14).
- **claim 11:** The steel of D2 is further electrolytically galvanized after annealing (paragraphs 0038, 0074, claims 12,15).
- **claim 12:** D2 further discloses the steps of annealing for 69 sec. at 805°C, cooling to the temperature of a Zn-bath at a cooling rate of 7°C/s, holding at 480°C - 450°C for 10.5 sec. for hot dip galvanizing, cooling to 250°C at a cooling rate of 12°C/s (example 1, paragraphs 0045-0046; example 2, paragraphs 0064-0065; claims 13-14).
- **claim 13:** Further subjecting the cold-rolled steel to a skinpass reduction of max. 1.5 % is seen as usual practice in production of steels for automotive industry, obvious for the person skilled in the art.

#### 5.3 Independent claims 14 - 18 and dependent claim 19 (product claims)

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These claims relate to a steel product produced according to the process of any of claims 9 to 13, having a multiphase microstructure comprising ferrite, bainite, retained austenite and possibly martensite and featuring certain levels of yield strength, tensile strength, elongation, strain and bake hardening coefficient (see also the lack of clarity and conciseness objection made above on par. 3).

It is clear from the entire description of the application that the desired microstructure of the claimed steel as well as the claimed properties depend on the chemical composition in combination with the process parameters.

As explained on paragraph 4 the claimed steel composition is regarded as being not novel with respect to D1.

The process steps claimed by present claims 9-13 are regarded as lacking an inventive step as explained above on paragraphs 5.1 and 5.2.

Therefore, also the properties claimed by present claims 14-19 which are obtained through the non-inventive process steps claimed by said claims 9-13 are seen as lacking an inventive step (Art. 33(3) PCT).

## Druckexemplar

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CLAIMS (first page - amended)

1. A steel composition intended to be used in a process comprising a cold rolling step, for the production of uncoated, electro-galvanised or hot dip galvanised TRIP steel products, said composition being characterised by the following contents :
  - C : between 1300ppm and 2600ppm,
  - Mn : between 10000ppm and 22000ppm,
  - Al : between 8000ppm and 15000ppm,
  - Si : between 2000ppm and 6000ppm,
  - P : between 400 and 1000ppm,
  - S : maximum 120ppm,
  - N : maximum 200ppm,
  - Ti : maximum 1000ppm,
  - Nb : maximum 1000ppm,
  - V : maximum 1000ppm,
  - B : maximum 10ppm.the remainder being substantially iron and incidental impurities.
2. The steel composition according to claim 1, comprising a carbon content between 1300ppm and 1900ppm.
3. The steel composition according to claim 2, comprising a carbon content between 1350ppm and 1900ppm.
4. The steel composition according to claim 2, comprising a carbon content between 1400ppm and 1900ppm.
5. The steel composition according to claim 1, comprising a carbon content between 1700ppm and 2300ppm.